1-2007

Editors' Introduction

Robert John KAUFFMAN
Singapore Management University, rkauffman@smu.edu.sg

Jae-Kyu LEE

Norman SADEH

DOI: https://doi.org/10.1016/j.elerap.2007.03.002

Published in Electronic Commerce Research and Applications,
Vol 6, Issue 1, January 2007, Pages 3–5
DOI 10.1016/j.elerap.2007.03.002

Editor's Introduction

ECRA Vol. 6. No. 1

Order of papers

1. **Preattentive Processing of Banner Advertisements: The Role of Modality, Location and Interference**, Gangseog Ryu, Elison Ai Ching Lim, Lynn Thor Ling Tan, and Youngjee Han.
2. **Development of an Automatic Customer Service System on the Internet**, Judy C.R. Tseng and Gwo-Jen Hwang.
3. **Lend Me Your Arms: The Use and Implications of Human-Centric RFID**, Amelia Masters and Katina Michael.
4. **Distribution Strategies for the Contextualized Mobile Internet**, Thomas Buchholz, Iris Hochstatter, and Claudia Linnhoff-Popien.
5. **Cheating in Online Auctions: Towards Explaining the Popularity of English Auctions**, Mamata Jenamani, Yuhui Zhong, and Bharat Bargava.
6. **WebTracer: A New Web Usability Evaluation Environment Using Gazing Point Information**, Noboru Nakamichi, Makoto Sakai, Kazuyuki Shima, Jian Hu, and Ken-ichi Matsumoto.
7. **D-Cash: A Flexible Prepaid E-Cash Scheme for Date Attachment**, Wen-Shenq Juang.
8. **A Simple Model and a Distributed Architecture for Realizing One-Stop E-Government**, Gonçalo Paiva Dias.
9. **NetPay: An Off-line, Decentralized Micro-Payment System for Thin-Client Applications**, Xiaoling Dai and John Grundy.
10. **Convenience and TAM in a Ubiquitous Computing Environment: The Case of Wireless LAN**, Cheolho Yoon and Sanghoon Kim.
11. **A Knowledge-Based Approach for Developing Multi-Channel E-Government Services**, G. Vassilakis, G. Lepouras, and C. Halatsis.

Note: The papers in this issue were handled and accepted by Jae-Kyu Lee, past co-editor of Electronic Commerce Research and Applications. The current senior editors thank Jae-Kyu for his continuing service to the journal.

This issue features a blend of empirical studies and technology-related articles, covering a number of aspects of e-commerce research and industry applications. The content includes works on online advertising and customer service on the Internet, the social and human aspects of radio frequency identification (RFID), the usability of the Web, content delivery and wireless local area networks, electronic auctions, micropayments, and e-government. This reflects the editorial mission of this journal, which is to attract a breadth of scholarship from the Computer Science and technical research community, the Information Systems and Technology research community, and from the Management, Strategy, Marketing, Operations, Finance and Policy communities associated with business schools and schools of public affairs. The included papers were accepted during 2005 and 2006, and they reflect the healthy backlog and flow of submissions the journal has been receiving in the past couple years.

This issue begins with an article that is entitled, ''Preattentive Processing of Banner Advertisements: The Role of Modality, Location and Interference''. The authors, Gangseog Ryu, Elison Ai Ching Lim, Lynn Thor Ling Tan, and Youngjee Han, examine the effectiveness of banner ads on the Internet, something that we all experience as Internet users every time we log on. As people become better at screening out these ads, the authors recognize that it will be important to turn to the literature on *preattentive processing* or *incidental exposure* for insight into how to provide managerial guidance for dealing with the changes in consumer behavior. They report on experiments aimed at contrasting the effectiveness of banner ads based on their modality in terms of whether they have verbal versus pictorial banner ad material, their positioning on Web pages, and their content, in terms of similar vs. different product categories. They authors' analysis builds on cognitive processing theories and competitive interference models.

The second paper is ''Development of an Automatic Customer Service System on the Internet'', by Judy C.R. Tseng and Gwo-Jen Hwang. The authors describe technology they have developed to increase the productivity of online customer service centers. Their approach relies on automatically

matching answers to frequently-asked questions (FAQs) with incoming customer requests. They report success with an approach that involves the customization of prior query replies by personnel working at the customer service center, and then storing and cataloging these for future use. The empirical results of their research suggest that this approach will yield significant increases in productivity while also enhancing customer service quality.

The next article shifts the discussion to the realm of emerging technologies and radio frequency identification. Amelia Masters and Katina Michael, in "Lend Me Your Arms: The Use and Implications of Human-Centric RFID," examine the usability, social, ethical and market dimensions associated with the possible deployment of human-centric RFID, and emphasize "three C's" in their analysis of usability contexts: control, convenience and care. The *control dimension* deals with security, management and social control aspects, for example, the application of RFID to security protocols, access capabilities, and the movement of people. The latter, as the authors note, involves the application of RFID tags to monitor incarcerated prisoners, parolees and other "threats to society". The *convenience dimension* is useful in identifying human applications of RFID involving customer services and assistance, the facilitation of financial services, and responsive human-building interactions in technologically-intelligent environments. The *care dimension* emphasizes medical, biomedical and therapeutic applications of RFID. These all focus on the possible emergence of applications where RFID tags are implanted in humans. The authors close their discussion with a consideration of issues related to the tradeoffs between personal privacy and data security issues involving consumers, services providers and the government. This is a useful survey for people who are interested in tracking the next-stage issues that will emerge with "RFID implants".

Mobility, organizations, systems and technologies are increasingly important aspects of the digitization of our global society. In another new exploration of issues related to this, Thomas Buchholz, Iris Hochstatter, and Claudia Linnhoff-Popien study the problem faced by content delivery networks that are responsible for caching content for vendors of context-aware services. Their article is entitled "Distribution Strategies for the Contextualized Mobile Internet". They present a new approach that bases its *replication placement* decisions on a profit maximization model, and uses statistical process control techniques to adapt to changes in request rates from content consumers. The authors' empirical results suggest that this new technique can significantly reduce storage and bandwidth requirements in comparison to earlier solutions, while providing customers with comparable service performance. This is an interesting article in the sense that it is a forerunner of a spate of new interdisciplinary research that we expect to see associated with the emerging sub-disciplines of "services science" and "IT services management".

Another important area of research in electronic commerce focuses on the design and performance of online auctions and electronic markets. The next article, "Cheating in Online Auctions: Towards Explaining the Popularity of English Auctions", by Mamata Jenamani, Yuhui Zhong, and Bharat Bargava, uses theoretical models and simulation experiments to look at the impact of cheating in different types of online auctions. This includes *shill bidding* in English auctions, *bid shading* in first-price auctions and *false bidding* in second price auctions. The occurrence of each of these kinds of fraud creates a less attractive environment for buyers and sellers in the long run for most online auctions, largely due to the fact that they begin to take on the classical properties of Akerlof's *market for lemons*, and are subject to diminished transaction mechanism value, if not outright failure as a trading mechanism. The authors examine auction bidders' expected utility and sellers' expected revenue loss subject to different probability assumptions about the occurrence of fraud, and report on the overall losses in mechanism value that result. The research provides cautionary advice to senior managers who operate electronic auctions about the importance of making sure that their mechanism design and fraud prevention policy choices create incentives so that instances of fraud are minimized.

The next article features a group of Japanese authors, Noboru Nakamichi, Makoto Sakai, Kazuyuki Shima, Jian Hu, and Ken-ichi Matsumoto, who discuss their work WebTracer, a tool they have developed to record how users shift their eyes as they browse Web pages on the Internet. Their paper is titled "WebTracer: A New Web Usability Evaluation Environment Using Gazing Point Information". This is an interesting area for study to shed light on the physical behavior of humans and their use of the internet, relative to the design choices that developers can make to support the key human factors that are identified. The authors show that their tool's memory requirements are substantially smaller than those of prior techniques. Their research also makes the case that the information which WebTracer collects can be used to complement more traditional usability analysis techniques, such as think-aloud protocols and user interviews, in identifying areas of a Web site design which may be appropriate to modify.

Electronic payment systems are typically viewed as the backbone for a successful infrastructure for electronic commerce transaction-making, and reflect an important area of continuing editorial interest in this journal. In this next article, "D-Cash: A Flexible Prepaid E-Cash Scheme for Date Attachment", the author, Wen-Shenq Juang, considers the problem of computing interest in an e-cash system while preserving the anonymity of the person making the payment through the maintenance of the non-traceability of the transaction. The author introduces a system called "D-Cash", which extends David Chaum's blind signature scheme to keep track of the key dates of interest for withdrawal of funds, and the effective value and deposit dates required to compute the applicable interest in the presence of prepayment. This is the notion of *date attachment*, an

important capability to support certain kinds of transactions in e-commerce, especially those which involve some pre-commitment on the part of the consumer to pay in advance for services to be rendered in the future, or to make payments over time on services rendered in the past.

In "A Simple Model and a Distributed Architecture for Realizing One-Stop e-Government", the eighth paper of this issue, Gonçalo Paiva Dias builds on his experience developing e-government prototypes for local authorities to propose a decentralized architecture for a one-stop shopping approach to e-government services. A central problem in the e-government domain lies in bringing together the technology platforms of agencies that provide different services with sometimes disparate technological capabilities. Not only are the costs sometimes prohibitive, just as we see in for profit entities, so also are there problems with different generations of systems solutions, different standards and different approaches to implementation – not to mention the complications of making these systems accessible to citizens and taxpayers. The authors propose an architecture that aims to support citizens through an intuitive and unified front-end in which user-centered processes insulate them from the idiosyncratic boundaries separating different government agencies and departments, and the systems that support them. The authors cite the need for solutions that provide five key features: a client-centered approach, channel multiplicity, concurrent access points, versatility and inclusiveness relative to technical standards, and the provision of acceptable security.

Over the years, the idea of *micropayments*, which typically are identified as payment amounts for which it is uneconomical to use a credit card due to transactions costs – for example, less than US$10 – has come into and gone out of vogue, based on business and consumer expectations about the transaction costs that were involved. Examples are Digital Equipment Corporation's (and then Compaq/Hewlett-Packard's) "Millicent", and "iPin", a subsequent innovation that involved the use of Internet service providers as payment bundlers to achieve economic transactions and settlement costs. In this next design science paper, the authors, Xiaoling Dai and John Grundy, present a new approach entitled "NetPay: An Off-line, Decentralized Micro-Payment System for Thin-Client Applications." They describe NetPay as an offline, decentralized micropayment system for thin-client applications. Their proposed system relies on one-way hash functions to efficiently provide for secure and anonymous payments, to overcome some of the difficulties that were apparent in prior micropayment system. The authors present demonstrational operational results for simulations obtained with two prototype implementations of their system. The challenges of adoption and usage remain, however, similar to other micropayment system innovations that have been proposed in the past. Unfortunately, the historical record for micropayment systems suggests that essentially all of the approaches that have been tried out in industry to date have been doomed to failure, and – as appears to be most often the case – not because of technical problems, but due to consumer demand and whether an economically valuable need is being served in the appropriate business process contexts.

In the next article, "Convenience and TAM in a Ubiquitous Computing Environment: The Case of Wireless LAN", Sanghoon Kim and Cheolho Yoon explore the role of *perceived convenience* in their study of the user acceptance of wireless LAN technologies. They report that perceived convenience is a precursor to perceived usefulness in this context, but the latter does not have a direct impact on user acceptance of wireless LANs. They also find that perceived convenience mediates the relationship between perceived ease of use and perceived usefulness. Although the extension the authors offer to the *technology acceptance model* (TAM) is only minor in the scheme of theoretical research in this area, this article is interesting for the issues it studies which arise in ubiquitous computing environments like the one that they have chosen.

A second article that deals with the delivery of e-government services, and the last article in the issue, is by G. Vassilakis, G. Lepouras, and C. Halatsis. "A Knowledge-Based Approach for Developing Multi-Channel E-Government Services". This paper describes a knowledge-based approach to developing and supporting multi-channel e-government services. The authors' goal is to find a way to make it so that it is possible to perform the automated production of service versions that are tailored for specific delivery channels. According to this approach, channel-independent business logic can be separated from channel-dependent presentation issues for each delivery channel, allowing for the modeling of business logic to be performed only once by the systems analyst. The authors also recommend the use of *generation engines* to produce executable service images for the selected delivery channels. This approach separates the elements of a service that are channel-independent from those that vary from one access channel to another, thereby reducing the amount of work involved in supporting new access channels. Such capabilities as we see discussed in this article also are important in support of future capabilities on the Internet for the delivery of highly-customized services to customers who are interested in consuming *hyper-differentiated* services via the Web.

We would like to take this opportunity to thank the reviewers for the detailed feedback which they provided to the authors, and acknowledge the authors for their willingness to improve their papers for publication.

Robert J. Kauffman
Jae-Kyu Lee
Norman Sadeh